

Written Proposal

Generated by Micah Ammons, Mason Wilhite, Andrew Trombley
Advisor: Chuck Meacham

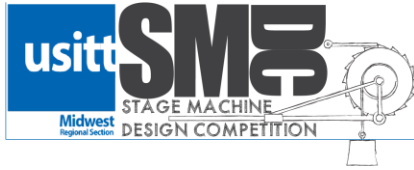
Concept Explanation

The basic concept for our petal drop is centered around a spindle that facilitates the flow of petals. The parts are as follow:

- Housing- A custom made box/container that will hold the petals, roller, and facilitate the chain and motor.
 - An opening in the top to allow for petal (or other material) load in.
 - A cnc'd space custom cut to fit and house the motor on top
 - A track to allow for the chain to pass from motor to the spindle at the bottom and back to the motor.
 - A hole in the bottom where the spindle will sit to regulate petal drop/flow/speed.
- Spindle- A sponge roller (cylinder) that is connected by chain to a motor that will rotate it on will.
 - Will fit close to the dimension of the hole in the bottom of the housing (exact measurement to be figured out).
 - Will allow for chain to connect to it to allow for rotation from the motor.
 - Will be close enough to the dimensions of the bottom opening to block petals from escaping, but smaller than the opening by a TBD amount to allow petals to be squeezed out at select time.
 - Most likely will be a paint/sponge roller.
- Motor- A motor that allows for a continuous loop of chain. The specifications for the motor and power source are at the end of the Material and Costing page.
 - The motor will be a continuous circle; it will pull chain elicit a full rotation of the spindle.
- Chain- Basic chain that is long enough to connect to the motor, run down the length of the housing, run through the spindle, and back up the other side to the motor.
 - A master link will be used to make the chain a full circle.
- Reload- To reload, we will create a contraption that is essentially a bucket attached with a hinge to a 15 ft. pole with a pulley system. The bucket will latch on to the side of the contraption nice and snug, and then the pulley system will tip the bucket forward, thus dumping the flower petals into the machine.

A summation of all parts

Our concept, in theory, addresses every specification for the challenge. We restricted the flow of the petals falling to one point for control. This point is facilitated by the spindle. The spindle can be control by adjusting and predetermining the speed at which is rotates (as controlled by the motor), as well as the distance we allow it to rotate. The gap between spindle and housing (that the petals will be pulled through) will be tailored in our experimental phase so that petals only drop at a consistent rate that is deemed "gently" and "slowly" and only when we (or whomever) wants petals to fall. The contraption

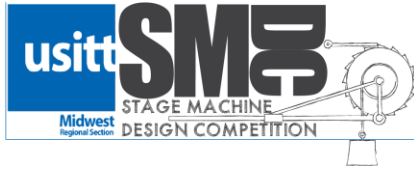


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itself will easily sit under the allotted footprint, yet if needed to be replicated, the concept for the contraption can provide for prototypes that can adhere to a whole slew of different size requirements (for example, the concept could be applied to a space that allows for bigger dimensions which could allow for more volume of petals to be dropped. Additionally, the concept could be applied to spaces that require an angled or nontraditional space needed for the petal drop to exist). By adjusting the gap between housing and spindle, we can tailor this drop to not only drop petals, but can allow for the dropping of other materials, such as snow or ping pong balls.

To operate our machine, we will need an extension cord that can run from the machine, across the batten to the location of stage, and be plugged into a power strip that can be turned on and off by an individual. The drop itself can be operated offstage remotely (depending on the motor). Additionally, it can be turned on off-stage or the drop can be patched into the light board and controlled there or even be added into cues for the show to get exact timings. The theory is malleable enough to provide a solution to operation in many different settings.



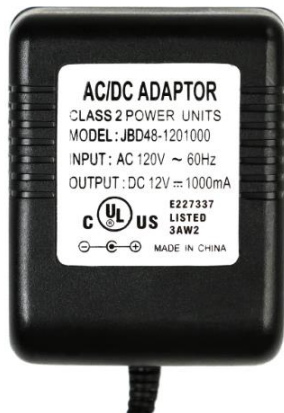
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Material and Costing

<i>Material</i>	<i>Amount Needed</i>	<i>Unit Price</i>	<i>Total</i>	<i>Site</i>
4x8 ACX Plywood	8ft. Sheet	\$24.73	\$24.73	https://www.menards.com/main/building-materials/panel-products/tile-backer-board/4-x-8-acx-plywood/1251400/p-1444425372382-c-5704.htm?tid=-162598634402918079&ipos=3
Sponge Roller	1	\$2.10	\$2.10	
Paint Roller Frame	1	\$1.78	\$1.78	
Drive Chain	5ft.	\$4.19 per Ft.	\$20.95	
Gear Box Motor	1	\$35.25	\$35.25	https://www.amazon.com/TSINY-Small-Torque-Reversible-Motor/dp/B073WMCM41
Power Source	1	\$12.99	\$12.99	(Picture below)
8mm w/ 24 teeth gear	2	\$9.89	\$19.78	
Total Cost			\$117.58	

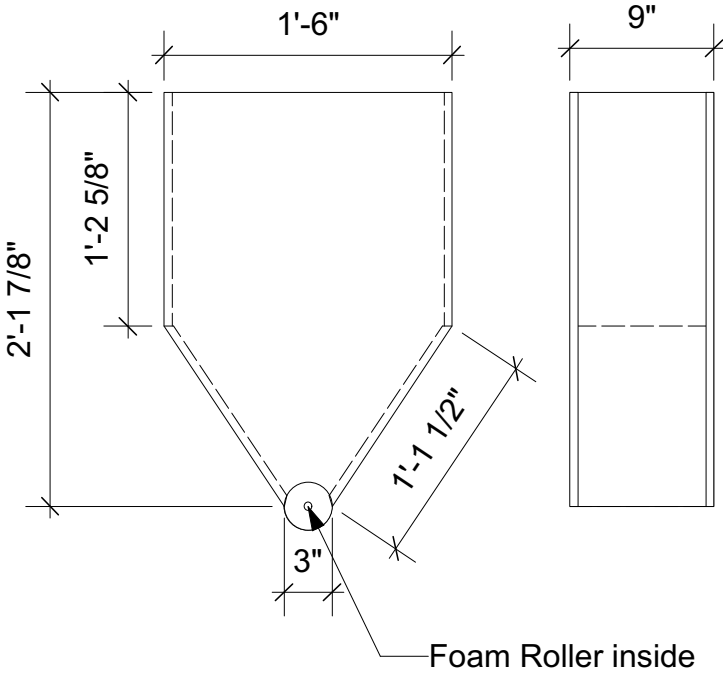
Motor- TSINY Small High Torque 12 Volt Reversible 35 RPM DC Worm Gear Motor BBQ Drive



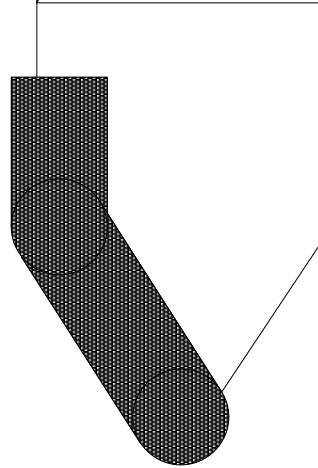
Power supply-

Larger sides will be cnc'd to precise sizes, as well as having the holes for spindle cut out. Housing for motor and chain may have to change as we find the exact sizes.

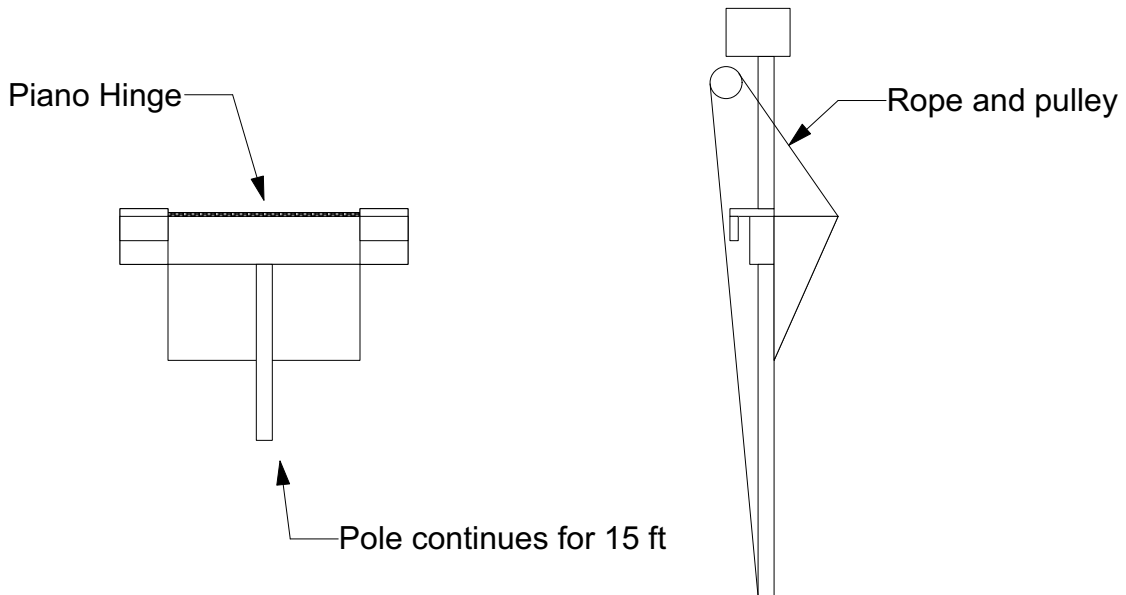
Drop Bucket



Motor and chain housing, will need to change based on the true dimensions



Reloading Mechanism



User Manual

Petal Dropper

Safety Instructions:

Read the entire safety manual before installation and use of petal dropper.

1. Dropper must be plugged in proper outlets following all codes and ordinances.
2. Do not expose electrical parts to wet or damp environments.
3. Do not abuse or tamper with electrical cables.
4. Do not tamper with motor.
5. Do not tamper with chains.
6. Do not tamper with motor or chain while dropper is running.
7. Keep Housing for chains and pulleys in place during operation.
8. Make sure that all tools are removed from the dropper before operating.
9. Keep dropper clear of any dangerous material (i.e. Staples, Nails, Screws, ect).
10. Do not Cut or tamper with housing of dropper
11. Keep all openings clear of hazardous materials.
12. Do not touch or try to replace spindle while the dropper is turned on.
13. Do not use dropper for anything but its intended use.
14. Make sure dropper switch is turned to **off** before connecting to power. (120V AC Power)
15. Make all machine adjustments and maintenance while dropper is not connected to power.
16. Check for damaged parts before use. Check all parts before use, if any part is deemed dangerous, replace before using.
17. Maintain dropper with care.
18. Do not place hands in outlet of dropper while dropper is connected to power.

User Instructions:

1. Remove Petal Drop from packaging and inspect for broken parts.
2. Install chain on motor and pulley system.
3. Connect to power source to check all function parts of dropper.
4. Check motor housing compartment to be sure that all mechanical parts are clear of obstruction.
5. Install C-Clamp and yoke onto dropper.
6. Install system onto lowered batton.
7. Make sure that there is enough cable to keep petal dropper connected to power without straining cable connected to petal drop.
8. Fill petal drop with desired petals.
9. Fly out petal drop while watching to make sure that there is no strain on the connection between the petal drop and the power source.
10. Test dropper from height to ensure that electrical issues have not arisen from the flying out of the batton.

Reloading:

1. When using the reloading mechanism, make sure that the hinges are secure.
2. Before raising the reloading mechanism into the air be sure to check and see that all parts are secure.
3. When using make sure that pulleys and ropes are secure.
4. Check all parts before raising loading mechanism into the air.
5. Make sure that the ropes are cleared of cuts and fraying.
6. Make sure that all parts are in working order before using reloading mechanisms.

Operations:

1. Fill dropper with petals before flying out.
2. Connect dropper power supply to 120V power source.
3. Attach dropper to batton.
4. Fly dropper filled, and connected to power, out on batton.
5. Test to make sure that all operations are working in the machine.
6. When the dropper is flown out the first time, run the dropper for the allotted time, requested by the director, to make sure that there are no issues that arose in the dropper due to transit.
7. After testing is done, turn off the dropper and reload using the loading mechanism.

Reloading:

1. Make sure that all parts of the reloading mechanism are working before raising into the air.
2. Fill reloading bucket with petals.
3. Raise bucket into the air using the 15 foot extension arm.
4. Using hooks that are attached to the bucket, attach the end of the bucket into the side of the dropper, creating an easy path for the petals to run through.
5. Using the rope and pulley system, pour the petals into the dropper.
6. After dropper is reloaded detach reloading mechanism and store for next intended use.